

<b>Module Title:</b>	<b>O2 – IT for a Longer Independent Life</b>
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Suggested Learning and teaching hours	80 hrs
Suggested Independent study	70 hrs
<b>Module duration (total hours)</b>	<b>150 hrs</b>

### Module Aims

The overall aim of the module is to develop students' skills in designing software applications to support a longer independent life for their users.

It is used to administrate and to monitor the development of the module. In this format, it is not supposed to be used by students, but it aims to support teachers to understand the structure of the course, and which materials are appropriate.

There are 5 chapters each representing approximately 10 blocks of 90 minutes teaching, making a total of 15 hours (+ 1 for contingencies). Therefore, there is a total of 80 hours teaching activity for this output.

### Target Group and Prerequisites

This module is designed for students who have almost finished their Bachelors Degree or who are doing their Masters Course. It should be accessible to a wide range of student specialisms, including computing, clinical, business, design, and engineering subjects.

### Learning Outcomes

At the end of this module, students will:

1. Possess the knowledge and skills to produce high-quality prototype designs that can subsequently be tested with users in a controlled environment, such as a usability laboratory;
2. Gain the appropriate skills to design field testing (in real-world environments).

### Module Delivery Guidance

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This module comprises as set of Microsoft Powerpoint presentations, some of which have teacher's guidance notes in the Notes sections of the presentations.

### Assessment:

There are two assessments. One is an app design exercise, the other is a usability evaluation plan. They are weighted at 50% each for the overall module assessment.

Assessment 1: Design an app for a clinical need to solve a problem in the domain of supporting independent living for older and/or disabled people, using an appropriate design tool (e.g. Marvelapp).

Assessment 2: Write a usability evaluation plan that could be used to test the fully developed app in an appropriate real-world setting. It is **not** necessary to develop the app itself.

### Syllabus and resources:

#### Chapter 1: Principles of Human-Computer Interaction - HCI

- O2\_Ch1\_TEACHER.pptx - Introduction

The PDF version of the slides are also available (STUDENT).

The PDF version of the slides with teacher notes are also available (TEACHER).

#### Chapter 2: Understanding user population, especially older people

- O2\_Ch2\_TEACHER.pptx

The PDF version of the slides are also available (STUDENT).

The PDF version of the slides with teacher notes are also available (TEACHER).

#### Chapter 3: User interface design tools and practice

- O2\_Ch3\_TEACHER.pptx

The PDF version of the slides are also available (STUDENT).

The PDF version of the slides with teacher notes are also available (TEACHER).

#### Chapter 4: Designing for older and disabled people

- O2\_Ch4\_TEACHER.pptx

The PDF version of the slides are also available (STUDENT).

The PDF version of the slides with teacher notes are also available (TEACHER).

## Chapter 5: User interface evaluation

- O2\_Ch5\_TEACHER.pptx

The PDF version of the slides are also available (STUDENT).

The PDF version of the slides with teacher notes are also available (TEACHER).

### Suggested reading list and links:

Chapter 1: Principles of Human-Computer Interaction - HCI (cognition/cognitive psychology; task and user requirements analysis; user-centred design principles).

1. [ACM Computing Surveys](#) [SJR]
2. [ACM interactions](#) [MAS] [SJR]
3. [ACM Transactions on Computer Human Interaction](#) [SJR]
4. [ACM Transactions on Interactive Intelligent Systems](#) [SJR]
5. [Advances in Human-Computer Interaction](#) [SJR]
6. [Behaviour and Information Technology](#) [SJR]
7. [Cognitive Computation](#) [SJR]
8. [Computers in Human Behavior](#) [SJR] [SD]
9. [Foundations and Trends in Human-Computer Interaction](#) [SJR]
10. [Human-Computer Interaction](#) [SJR] [WoS]
11. [IEEE Systems Man and Cybernetics, Part A: Systems and Humans](#) [SJR]
12. [IEEE Transactions on Affective Computing](#) [SJR]
13. [IEEE Transactions on Human-Machine Systems](#) [SJR]
14. [Interacting with Computers](#) [SJR]
15. [International Journal of Ambient Computing and Intelligence](#) [SJR]
16. [International Journal of Human-Computer Interaction](#) [SJR]
17. [International Journal of Mobile Human Computer Interaction](#) [SJR]
18. [International Journal of UbiComp](#) [MAS]
19. [International Journal of Virtual Reality](#) [---]
20. [Journal of Ambient Intelligence and Humanized Computing](#) [SJR]
21. [Journal of Ambient Intelligence and Smart Environments](#) [SJR]
22. [Journal of Organizational and End User Computing](#) [SJR]
23. [Journal of Usability Studies](#) [---]
24. [Multimodal Technologies and Interaction](#) [---]
25. [Personal and Ubiquitous Computing](#) [SJR]
26. [Pervasive and Mobile Computing](#) [SJR] [WoS]
27. [Proceedings of the ACM on Human-Computer Interaction](#) [---]
28. [User Modeling and User-Adapted Interaction](#) [SJR]
29. [Virtual Reality](#) [SJR]

Chapter 2: Understanding user populations, especially older people (scoping user populations; identifying individual and collective needs; ethical issues in user interface design and development);

1. ACM Code of Ethics and Professional Conduct - <https://www.acm.org/code-of-ethics>
2. Benyon, D. (2013). Designing interactive systems: People, activities, contexts, technologies. Third edition. Pearson Education.

3. Blomberg, J. and Burrell, M. (2007) "An ethnographic approach to design" in Sears, A., & Jacko, J. A. (Eds.). The human-computer interaction handbook : fundamentals, evolving technologies and emerging applications, second edition. CRC Press.
4. Carrol, J. M. (1999). Five reasons for scenario-based design. In Systems Sciences, 1999. HICSS-32. Proceedings of the 32nd Annual Hawaii International Conference on (pp. 11-pp). IEEE.
5. Cooper, D. R. & Schindler, P. S. 2006, p.116. Business Research Methods. London: McGraw-Hill.
6. Davoody, N., Koch, S., Krakau, I., & Hägglund, M. (2016). Post-discharge stroke patients' information needs as input to proposing patient-centred eHealth services. BMC medical informatics and decision making, 16(1), 66.
7. Dix, A., Beale, R., & Abowd, G.D. (2003), Human-Computer Interaction, Pearson Education UK, Upper Saddle River.
8. Mason, R. O. 1986. "Four ethical issues of the Information Age", MIS Quarterly 10 (1) (March), 5-12.
9. Salkind, N.J. (2013). Exploring research: Pearson new international edition. Pearson Higher Ed.
10. Pinto, A. D. & Upshur, R.E G. (2009), Global Health Ethics For Students. Developing World Bioethics, 9:1-10. doi:10.1111/j.1471-8847.2007.00209.X
11. Shneiderman, B. (2000), Universal Usability: Pushing human-computer interaction research to empower every citizen, COMMUNICATIONS OF ACM May / Vol. 43, No. 5.
12. Unger, R., & Chandler, C. (2012). A Project Guide to UX Design: For user experience designers in the field or in the making. New Riders.

Chapter 3: User interface design tools and practice (early design and prototyping; design methods and standards; documenting and presenting user interface design solutions);

- There are many links in the Powerpoint presentation to guide the student towards further reading.
- Specific design guidelines are listed below:
  - [Apple Human Interface Guidelines](#)
  - [Google Material design](#)
  - [IBM visual design guidelines](#)
  - [styleguides.io](#) (Collection of website and ui style guides)
  - [Style Guides by Pro Designers](#) (article)
  - [Audi UI style guide](#)
  - [A comprehensive guide to design systems](#) (article)

Chapter 4: Designing for older and disabled people (physical/cognitive challenges; assisted living technologies; accessibility; adaptive technologies);

References to the projects described in the presentation are given below:

- <https://www.youtube.com/watch?v=RVUJ6Wx9OB8&t=7s>
- [Kinect for Xbox One](#)
- [Orbbec 3D](#)
- [Intel RealSense Technology](#)
- [TVico](#)
- [NUI TRACK SDK](#)
- [Tobii AB](#)
- [Gazepoint](#)
- [Vive](#)
- [Oculus](#)

Chapter 5: User interface evaluation (methodology and techniques; quantitative analysis; qualitative analysis; validity and reliability of evaluation analysis);

1. Dumas, J.S., Redish, J.C. (1999) A Practical Guide to Usability Testing. Intellect
2. ISO (2018) ISO 9241-11:2018 Ergonomics of human-system interaction — Part 11: Usability: Definitions and concepts
3. ISO (2010). ISO 9241-210:2010 Ergonomics of human-system interaction -- Part 210: Human-centred design for interactive systems
4. Lazar, J, Feng, J.H., Hochheiser, H. (2010) Research Methods in Human-Computer Interaction, Morgan Kaufmann
5. MacKenzie I. S. (2012). Human-Computer Interaction: An empirical research perspective. Newnes.
6. Norman, D.A. (2003). Emotional Design: Why We Love(or Hate) Everyday Things, 1st edition, Chapter I
7. Nielsen Norman Group <https://www.nngroup.com/>